

FOSSIL SCOLEBYTHIDS (HYMENOPTERA: SCOLEBYTHIDAE) FROM LEBANESE AND DOMINICAN AMBER

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Abstract.—The first two fossil species of Scolebythidae are described: *Libanobythus milkii*, n. gen., n. sp., from Lebanese amber of Early Cretaceous, and *Dominibythus inopinatus*, n. gen. n. sp., from Dominican amber of Late Eocene to Late Oligocene. The relationships of these tax to extant scolebythids are discussed.

The family Scolebythidae is a morphologically unusual and very rarely encountered group of chrysoid wasps that has been only recently recognized (Evans 1963). The family may be immediately identified by its unique apomorphies that include a remarkably modified propectus. In the extant fauna, it is represented by three species, viz. *Clystospenella longiventris* Kieffer, *Scolebythus madecassus* Evans, and *Ycaploca evansi* Nagy. The fossil *Cretabythus sibiricus* Evans was tentatively assigned to this family by Evans (1973), but is apparently not closely related to Scolebythidae (Rasnitsyn 1988). We describe below the first unquestionable fossil scolebythids, *Libanobythus milkii* gen. et sp. n. from Lebanese amber of Early Cretaceous age (135–120 Ma) and *Dominibythus inopinatus* gen. et sp. n. from Dominican amber of Late Eocene to Late Oligocene age (40–15 Ma). Considering the rarity of the family today, its occurrence in both ambers is noteworthy, particularly its presence in the Early Cretaceous.

MATERIALS AND METHODS

Morphological terms used here are those in general use in aculeate systematics (e.g. Michener 1944, Richards 1977). The ter-

minology and modified drawing conventions of Mason (1986) for stages of venational reduction are used. For brevity, the seven metasomal tergites and eight sternites are referred to as TI–TVII and SI–SVIII, respectively. All illustrations, except those of the male genitalia, were made with a camera lucida from specimens submerged in safflower oil to minimise optical distortion. The male genitalia of *Dominibythus inopinatus* were illustrated with an ocular grid at 160× magnification. The illustrations were refined using the Adobe Illustrator computer program (Adobe Systems Inc.).

The piece of Lebanese amber containing the holotype of *Libanobythus milkii*, like most Lebanese amber, was very fragile and contained many internal fractures before preparation. To strengthen the amber for polishing and to improve the clarity of the piece, the specimen was embedded in Ward's bioplastic. After embedding, the piece was polished down by hand as nearly as possible to the level of the fossil to improve the visibility of the wasp. The piece was then re-embedded in plastic to cover exposed portions of amber. Because of the clarity of the Dominican amber containing the holotype of *D. inopinatus*, this speci-

men was not embedded in plastic for study. [For permanent preservation of amber fossils, however, it is recommended that they be mounted in some type of clear medium to protect them from eventual oxidation that would otherwise tend to cause discoloration and cracking (Poinar 1992).] After polishing, the pieces were studied in safflower oil.

AGE OF THE FOSSILS

The Lebanese amber specimen of *L. milkii* came from beds located near the mountainous villages of Jezzine and Dar al-Baidha. These beds occur in primary deposits of the Neocomian Epoch of the Early Cretaceous as well as in secondary deposits of the Barremian and Aptian stages. These deposits are dated from 120 to 135 million years old (Schlee and Dietrich 1970, Schlee and Glockner 1978).

The Dominican amber specimen of *D. inopinatus* originated from mines located in the Cordillera Septentrional, between Santiago and Puerto Plata, in the Northern Portion of the Dominican Republic. These mines are in the Altamira facies of the El Mamey Formation (Upper Eocene), which is shale sandstone interspersed with a conglomerate of well rounded pebbles (Eberle et al. 1980). Amber from these mines have been estimated by Lambert et al. (1985) to range from 15 to 40 million years old.

CHARACTERS OF THE FAMILY

The fossils may be recognized as Scolebythidae by their enlarged and exposed diamond-shaped prosternum and posteriorly produced fore coxae bearing the fore trochanters laterally (Figs. 3, 6). These propectal characters are unique apomorphies of Scolebythidae (Brothers 1975, Carpenter 1986) and provide the strongest evidence for the family-group identities of the fossils. Both species also have most other apomorphies of the family listed by Brothers (1975) including a small, transverse clypeus, reduced metanotum (only visible in *D. inopinatus*), enlarged femora, and a complete lack of middle tibial spines. They also

possess short, broad mandibles and venation that may be readily derived from the typical scolebythid pattern (Figs. 5, 7). Like extant scolebythids, both fossil forms have a convex and smoothly rounded first metasomal sternite that does not form an articulation with the second metasomal sternite and have a noticeably concave anterior surface on the first metasomal tergite. Like extant female scolebythids, the female of *L. milkii* possesses enlarged genae. Loss of the pronotal collar, which is another apomorphy of the family listed both by Brothers (1975) and Carpenter (1986), is present in *D. inopinatus* but not *L. milkii*, which has a less declivous and more elongate pronotum. Given this list of features, there can be no other taxonomic placement for the fossils.

As members of Chrysidoidea, the fossils possess the standard features of the superfamily including reduced forewing venation, lack of any closed cells in the hind wing (true of all Chrysidoidea except Plumariidae), 13-segmented female antennae and no jugal lobe.

KEY TO SCOLEBYTHID GENERA

1. R1 vein of forewing complete and fusing with Rs vein apically
 extant genera, see Nagy (1975) for key
- R1 vein of forewing absent, not fusing with Rs vein apically (Figs. 5, 7) extinct genera, 2
2. Discoidal cell defined by tubular veins, pronotum longer than scutum dorsally (Fig. 5)
 *Libanobythus*, new genus
- Discoidal cell absent (Fig. 7), pronotum markedly shorter than scutum dorsally (Fig. 4)
 *Dominibythus*, new genus

Dominibythus Prentice and Poinar, new genus

Type and only known species: *Dominibythus inopinatus*, new species.

Generic characters.—Frons elevated between antennal sockets, with carina arising at medial margin of antennal socket and extending outward dorsally creating two slightly depressed lateral areas that receive antennal scapes (Fig. 8). Orbits converging ventrally (Fig. 8). Ocelli positioned slightly